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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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23850	7590	11/18/2003	EXAMINER	
ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP			DEJESUS, LYDIA M	
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SUITE 1000			PAPER NUMBER	
WASHINGTON, DC 20006			2859	

DATE MAILED: 11/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/040,952

Applicant(s)

OHSHIMO, JUN

Examiner

Lydia M. De Jesús

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,4,6,7 and 9-22 is/are pending in the application.
- 4a) Of the above claim(s) 10-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6,7,9 and 17-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 1, 4, 7 and 17-19 are objected to because of the following informalities:

In the case of claims 1, 4, and 7, the claim language describes the light guide as having two opposing faces having larger areas than the other faces thereof and further refers to an end face of the light guide. Although it appears that said end face refers to one of said "other faces" of the light guide, it is suggested that the language be further clarified to identify the end face in reference to said two opposing surfaces in order to avoid confusion.

With respect to claims 17 through 19: There is insufficient antecedent basis for the limitation "the light ejecting face".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 7, 9, 19 and 22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 7 appears to be inconsistent with the disclosure due to the limitation “the light guide takes in the light through one end face thereof, reflects the taken-in light at the reflection portion, and ejects the reflected light from the other of the two opposing faces thereof”.

In this case, the positioning of the light emitter, the light guide and light receiver in said space recited in the first portion of claim 7 is consistent with the embodiment illustrated in Figure 9, but the language of the claim directed to path of entry and exit of the light through the light guide is inconsistent with Figure 9, which explicitly shows that the light guide [3] takes in the light through the face opposing the reflecting portion [3a] and ejects the reflected light through an end face thereof, perpendicular to the reflecting portion, towards the light receiver [2].

Claims 9, 19 and 22 are rejected due to their dependence upon claim 7.

Appropriate correction of claim 7 is required to clearly set forth Applicant's intention. However, for purposes of examination in the present Office action, since claim 1 is clearly directed to the embodiment illustrated in Figure 4, claim 7 and claims dependent thereon will be considered to correspond to the embodiment of Figure 9. Examination of said claims will refer to the features in said embodiment.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an

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international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Klang et al. [U.S. Patent 3,860,814, previously cited in Paper No. 8, hereinafter Klang].

With respect to claim 1: Klang discloses a light sensor, illustrated in figures 3, 7 and 8, for detecting entry of an object into a space i.e., for sensing the position of a tape loop in a tape loop storage system, the light sensor comprising: a light emitter/light source and a light guide [60 on Figure 8] both located on a first side of said space; a light receiver/light sensing means, located on a second side of said space, for receiving light emitted from said light guide/light source; said light guide [60] taking in the light emitted from said light emitter, reflecting the taken-in light at a reflection portion [18, as illustrated in Figure 1] comprised in the light guide, and ejecting the light across the space toward the light receiver/light sensing means, wherein the light guide [60] is plate-shaped, in this case described as a bar shown in Figure 1, and comprises the reflection portion [18] disposed on one of two opposing faces of the light guide having larger areas than the other faces thereof, and the light guide [60] takes in the light through one end face [11] thereof, reflects the taken-in light at the reflection portion [18], and ejects the reflected light from the other of the two opposing faces thereof; whereby entry of the object into said space is detected based on the light received by the light receiver (see lines 17-20 of column 3).

With respect to claim 7: It is further considered that the light sensor disclosed by Klang anticipates the light sensor of the embodiment shown in Figure 9 as discussed above in paragraph 2, since it comprises a light emitter/light source located on a first side of said space; a light receiver/light sensing means, located on the second side of said space, for receiving light emitted from said emitter, and further comprises an additional light guide [62, shown in Figure

8] located on the second side of said space; said light guide [62] taking in the light emitted from the light emitter, reflecting the taken-in light at a reflection portion [also 18, as illustrated in Figure 2] comprised in the light guide [62], and ejecting the light toward the light receiver/light sensing means, wherein the light guide is plate-shaped and comprises the reflection portion [18] disposed on one of two opposing faces of the light guides having larger areas than the other faces thereof, and the light guide [62] takes in the light through one end face thereof, perpendicular to the opposing faces, reflects the taken-in light at the reflection portion, and ejects the reflected light from the other of the two opposing faces thereof, whereby entry of the object into said space is detected based on the light received by the light receiver.

6. Claim 4 is rejected under 35 U.S.C. 102(e) as being anticipated by Fohl et al. [U.S. Patent 6,422,713 B1, hereinafter Fohl].

Fohl discloses system for viewing a reflective object [90] (see lines 8-13 of column 3) in a space, the light sensor comprising; a light emitter [102] and a light guide [104] both located on a first side of said space; a light receiver [116], located on the first side of said space, for receiving the light emitted from said light guide [104] and reflected by the reflective object [90]; and said light guide [104] taking in the light emitted from the light emitter, reflecting the taken-in light at a reflection portion [108] (see lines 41-55 of column 4) comprised in the light guide, and ejecting the light across the space toward the reflective object [90]; wherein the light guide is, in a broad sense, considered to be plate-shaped and comprises the reflection portion [108] disposed on one of two opposing faces of the light guides having larger areas than the other faces thereof, and the light guide takes in the light through one end face [106] thereof, reflects the

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taken-in light at the reflection portion [108], and ejects the reflected light from the other [110] of the two opposing faces thereof (see Figure 1 and Figure 6).

With respect to the preamble i.e., “A light sensor for detecting a position of a reflective object” and the recitation “whereby the position of said reflective object is detected based on the light received by the light receiver” in claim 4: It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex parte Masham, 2 USPQ2d 1647 (1987). In this particular case, as set forth above, the system disclosed by Fohl satisfies the claimed structural limitations recited in claim 4.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 3, 17 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugiyama [U.S. Patent 6,232,592 B1].

Sugiyama discloses a light sensor for detecting entry of an object into a space i.e., for reading characters on a transparent plate inserted in the space, the light sensor comprising: a light emitter [1] and a light guide [F] both located on a first side of said space; a light receiver [8], located on a second side of said space, for receiving light emitted from said light guide [F] (see lines 18-29 of column 7); said light guide [F] taking in the light emitted from said light emitter [1], reflecting the taken-in light at a reflection portion comprised in the light guide, and ejecting

the light across the space toward the light receiver, wherein the light guide is almost cylindrical and comprises a reflection portion [3] opposing a light emergent surface [4], and the light guide takes in the light through one end face [2] thereof, reflects the taken-in light at the reflection portion [3], and ejects the reflected light from the light emergent surface [4]; whereby entry of the object into said space is detected based on the light received by the light receiver. Sugiyama discloses that an intensity of light ejected from a face of the light guide is substantially uniform over an entire area of the light ejecting face/light emergent surface [4] (see lines 9-10 of column 8).

Moreover, Sugiyama teaches that the cross-sectional shape of the light guide may be rectangular, trapezoidal or any other shape similar to it.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to change the almost-cylindrical light guide disclosed by Sugiyama for a plate-shaped light guide or a light guide having a rectangular cross-section since, as taught by Sugiyama, the particular shape claimed by applicant is nothing more than one of numerous shapes that a person having ordinary skill in the art will find obvious to provide using routine experimentation based on its suitability for the intended use of the invention. See In re Dailey, 149 USPQ 47 (CCPA 1976).

In the light sensor resulting from said modification: The light guide is plate-shaped and comprises the reflection portion disposed on one of two opposing faces of the light guide having larger areas than the other faces thereof, and the light guide takes in the light through one end face thereof, reflects the taken-in light at the reflection portion, and ejects the reflected light from the other of the two opposing faces thereof, whereby entry of the object into said space is

detected based on the light received by the light receiver. Also, in the light guide resulting from said modification, the two opposing faces of the plate-shaped light guide having larger areas than the other faces are parallel, as shown in Figure 8, and the reflection portion comprises a series of parallel grooves i.e., saw toothed surface.

9. Claims 3, 9, 17-18 and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klang in view of Sugiyama.

Klang discloses a light sensor as claimed, as stated above in paragraph 5, but lacks a reflection portion comprising a series of parallel grooves. Klang further fails to show the two opposing faces of the light guide having larger areas than the other faces being parallel and an intensity of light ejected from a face of the light guide being substantially uniform over an entire area of the light ejecting face.

However, Sugiyama shows a light guide in a light sensor, said light guide taking in the light emitted from said light emitter, reflecting the taken-in light at a reflection portion comprised in the light guide, and ejecting the light across the space toward the light receiver, wherein the light guide is almost cylindrical and comprises a reflection portion [3] opposing a light emergent surface [4], and the light guide takes in the light through one end face [2] thereof, reflects the taken-in light at the reflection portion [3], and ejects the reflected light from the light emergent surface [4]; whereby entry of the object into said space is detected based on the light received by the light receiver. Sugiyama discloses that an intensity of light ejected from a face of the light guide is substantially uniform over an entire area of the light ejecting face/light emergent surface [4] (see lines 9-10 of column 8).

Moreover, Sugiyama teaches that the cross-sectional shape of the light guide may also be rectangular. As discussed above, the light guide resulting from said modification is plate-shaped and comprises the reflection portion disposed on one of two opposing faces of the light guide having larger areas than the other faces thereof, and the light guide takes in the light through one end face thereof, reflects the taken-in light at the reflection portion, and ejects the reflected light from the other of the two opposing faces thereof; whereby entry of the object into said space is detected based on the light received by the light receiver. Also, in the light guide resulting from said modification, the two opposing faces of the plate-shaped light guide having larger areas than the other faces are parallel and the reflection portion comprises a series of parallel grooves i.e., saw toothed surface.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace type of light guides disclosed by Klang i.e., multi-prism bars, for a plate-shaped light guide wherein the reflective surface comprises a plurality of parallel grooves, as that taught by Sugiyama, since both light guide configurations will perform the same function, if one is replaced by the other, of directing the light from the emitter on a first side of the space towards the receiver on a second side of said space.

10. Claims 6, 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fohl in view of Sugiyama.

Fohl discloses a system as claimed, as stated above in paragraph 6, but lacks a reflection portion comprising a series of parallel grooves. Fohl further fails to show the two opposing faces of the light guide having larger areas than the other faces being parallel and an intensity of light

ejected from a face of the light guide being substantially uniform over an entire area of the light ejecting face.

However, Sugiyama shows a light guide in a light sensor, said light guide taking in the light emitted from said light emitter, reflecting the taken-in light at a reflection portion comprised in the light guide, and ejecting the light across the space toward the light receiver, wherein the light guide is almost cylindrical and comprises a reflection portion [3] opposing a light emergent surface [4], and the light guide takes in the light through one end face [2] thereof, reflects the taken-in light at the reflection portion [3], and ejects the reflected light from the light emergent surface [4]; whereby entry of the object into said space is detected based on the light received by the light receiver. Sugiyama discloses that an intensity of light ejected from a face of the light guide is substantially uniform over an entire area of the light ejecting face/light emergent surface [4] (see lines 9-10 of column 8).

Moreover, Sugiyama teaches that the cross-sectional shape of the light guide may also be rectangular. As discussed above, the light guide resulting from said modification is plate-shaped and comprises the reflection portion disposed on one of two opposing faces of the light guide having larger areas than the other faces thereof, and the light guide takes in the light through one end face thereof, reflects the taken-in light at the reflection portion, and ejects the reflected light from the other of the two opposing faces thereof; whereby entry of the object into said space is detected based on the light received by the light receiver. Also, in the light guide resulting from said modification, the two opposing faces of the plate-shaped light guide having larger areas than the other faces are parallel and the reflection portion comprises a series of parallel grooves i.e., saw toothed surface.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace type of light guides disclosed by Fohl i.e., optical element with stepped-surface, for a plate-shaped light guide wherein the reflective surface comprises a plurality of parallel grooves, as that taught by Sugiyama, since both light guide configurations will perform the same function, if one is replaced by the other, of directing the light from the emitter on a first side of the space towards the reflective object on a second side of said space.

Response to Arguments

11. Applicant's arguments with respect to claims 1, 3-4, 6-7, 9 and 17-22 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments regarding the description of the light guide as being "plate-shaped" recited in claims 1, 4, and 7, state that a plate is defined as "a thin, flat sheet, of piece of metal or other material, esp. of uniform thickness" and further point out that uniform thickness is equivalent to the two larger sides being parallel: First, although the light guide disclosed is considered to be substantially plate-shaped, applying said definition of the term "plate" to the light guide of the disclosed light sensor is considered inaccurate because the light guide is not of uniform thickness due to the parallel grooves on the reflective portion in the light guide, as shown for example in Figure 5. Secondly, the Specification does not set forth that the term "plate-shape" corresponds to this definition and hence, the claim language is not restricted to this particular definition of the term. Additionally, even though the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. Furthermore, according to Applicant remarks the language of claims 20-22 would be redundant since the term "plate-shaped" would already establish said opposing faces of larger area as being parallel.

It is hereby noted that for purposes of examination in the present action, the claims will be interpreted in light of the Specification and the term "plate-shaped" has been applied to a light guide that has a shape similar to the disclosed light guide.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. This application contains claims 10-16 drawn to a species nonelected without traverse in Paper No. 8. A complete reply to the final rejection must include cancelation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lydia M. De Jesús whose telephone number is (703) 306-5982. The examiner can normally be reached on 7:30 to 4:00 p.m., Monday through Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F.F. Gutierrez can be reached on (703) 308-3875. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.



Diego F.F. Gutierrez
Supervisory Patent Examiner
Technology Center 2800

LDJ
November 13, 2003